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Juvenile Drug Courts: Using Participant Characteristics to Predict Outcome

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JUVENILE DRUG COURTS: USING PARTICIPANT CHARACTERISTICS TO PREDICT OUTCOME

by

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ABSTRACT

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Juvenile drug courts are becoming an increasingly popular answer to rising rates of substance use-related crime among adolescents in the U.S. However, outcome evidence for the efficacy of juvenile drug courts is limited at this time. Currently, approximately 50% of juvenile drug court participants do not graduate from drug court programs nationwide. However, the nongraduates are believed to have a poor prognosis following termination from drug court. The purpose of this study was to determine if participant characteristics are related to outcome in juvenile drug courts. Neither demographic variables (age, ethnicity, gender, socioeconomic status) nor substance use variables (age at first use, drug of choice, previous treatment, frequency of use) were significantly related to outcome (graduation status) in this sample. However, several scales on the SASSI-A2, a measure of adolescent substance use, provided a significant predication model for graduation from juvenile drug courts. This finding suggests that adolescents who meet diagnostic criteria for substance use disorders, have profiles

similar to other adjudicated youth, and who are consciously aware of both the symptoms and negative consequences of their substance use behavior, are more likely to benefit from juvenile drug court programs.

(78 pages)

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Sara M. Bogoshian

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CHAPTER I

INTRODUCTION

Although the prevalence rates for substance use disorders appear to have declined in the general U.S. population over the last decade, rates in the adolescent population are likely increasing (Kilpatrick, Acierno, Saunders, Resnick, & Best, 2000). To address this escalating problem, the federal government began a nationwide grant program in 1995 that provided start-up funds to communities to develop juvenile drug courts (JDCs). Juvenile drug courts are collaborative juvenile offender-substance abuse intervention programs, which involve an intimate partnership between community-based treatment programs, the justice system, the local school district, and the family of the offender (Cooper, 2002). No two JDCs are identical in terms of the procedures they follow. However, one common element of JDC is more frequent court contact than would be expected in the standard adjudication process, usually with one particular judge who is assigned to a juvenile's case. Also, JDCs commonly employ graduated sanctions for noncompliance with the judges' decisions, frequent and random urinalysis testing, family participation, individual therapy, and group therapy. These elements are present only in irregular ways in normal adjudication procedures.

Contemporary adolescent drug court models have essentially been "borrowed" from the adult drug court model, which became a popular alternative approach to managing adult offender-addicts around 1995 (Belenko et al., 1998). As in adult drug courts participants of JDCs usually progress through the program in three to four stages with decreasing levels of involvement following the completion of each stage. The drug court model is costly for taxpayers, but within adult addict-offender populations it has

been found to be less expensive over time than standard adjudication (Cooper, 2003; The National Consortium for Justice Information and Statistics, 2003; Turner et al., 2002). Outcome studies of the adult drug courts are tentative, but in general, these programs appear to be showing positive results (Cooper; Turner et al.).

However, little is known about the effectiveness of JDCs relative to typical adjudication procedures. It is well known that dropout rates from JDCs are quite high; that is, nationally only about 50% of drug court participants graduate from juvenile programs, while approximately 50% are terminated prematurely (Office of Justice Programs [OJP] Drug Court Clearinghouse Project, 2001). The available outcome data for JDCs primarily come from teens that remain in the drug court program for the duration of treatment. However, data are generally unavailable from the drug court participants who are terminated as they are generally incarcerated. It is generally believed that these terminated JDC participants have a poor prognosis (Tranchita, 2003). The high dropout rates within the JDC model may reflect the fact that although promising, existing programs are only effective with a portion of the substance-using juvenile justice population.

To date, fewer than five studies addressing the question of the effectiveness of JDCs have been published in professional journals or books. Cooper (2002) concluded from this limited evidence that JDCs are showing positive results (i.e., reducing participant recidivism and substance use). Sloan, Smykla, and Rush (2004) and Rodriguez and Webb (2004) also found that JDCs were successful at reducing recidivism. Clearly, with over 372 JDCs currently in operation (OJP Drug Court Clearinghouse Project, 2001) and virtually no empirical evidence to support their use

with juvenile delinquent populations additional research is needed. For example, one critical unanswered question is, "Are JDCs more effective than standard adjudication procedures and if so, for whom are they most effective?" Given the high rate of premature terminations from drug courts (approximately 50%), a more complete understanding of the efficacy of the current drug court model for different participants could lead to better drug court placement decisions.

Cooper (2002) reported that determining eligibility criteria for JDCs has been difficult because professionals lack knowledge of the types of juvenile behavioral markers that can more readily identify appropriate drug court participants. However, the research suggests that because JDC completers have significantly better outcomes than noncompleters, it is imperative that the JDC field begin the process of identifying the adolescents who will benefit most from these programs. The present study sought to contribute to the present body of knowledge regarding participant characteristics that may predict success in JDCs. Specifically the current study examined one key outcome of JDC programs (graduation status) as a function of participants' age, ethnicity, gender, socioeconomic status (SES), and substance use history. It was hypothesized that JDC graduates will differ significantly from nongraduates on these variables. Therefore, a profile of the likely characteristics of JDC graduates can be created. This profile could aid JDC professionals in making placement and treatment decisions.

CHAPTER II

REVIEW OF LITERATURE

Bodies of Literature Examined

Juvenile drug court dropout rates are very high (OJP Drug Court Clearinghouse Project, 2001). Thus, it is critical to obtain a better understanding of the characteristics of juveniles that relate to graduation status in JDCs. Indeed, in the sections of the literature review that follow characteristics of juvenile offenders that might predict outcomes in JDCs will be summarized. In discussing these relationships reference will be made to one or more bodies of research, specifically: (a) the JDC literature, (b) adult drug court literature, (c) adolescent substance use treatment literature, and (d) adolescent substance use/abuse risk factor literature.

Juvenile Drug Court Literature

First, in order to summarize what is currently known about how JDC outcomes relate to participant characteristics an exhaustive review of the JDC literature (mostly comprised of program process evaluations) will be presented. Relevant to the study, the review includes those JDC evaluations that have correlated some participant characteristic(s) with outcome. Unfortunately, due to the descriptive nature of the program evaluations conducted to date, the current JDC literature only occasionally provides insight into the question of whether particular participant characteristics relate to outcome.

Adult Drug Court Predictors of Outcome

Predictors of drug court success have been identified in recent studies examining correlates of adult drug court outcomes. Certain predictors of drug court success are presumed by many contemporary researchers to be age-independent. Therefore, future research may demonstrate that outcome correlates gleaned from the adult drug court literature might generalize to JDCs. For example, ethnicity is related to positive and negative outcomes in the adult drug court system (Butzin, Saum, & Scarpitti, 2002; Hartley & Phillips, 2001; Martinez & Eisenberg, 2002). Intuitively, this finding might be expected to apply to the juvenile system as well. Therefore, the relevance of the known predictors of adult drug court success for understanding JDCs outcomes will be discussed in this review.

Predictors of Adolescent Substance Use Treatment Outcome

Some evidence in support of examining JDC predictors of outcome can also be found in the broader adolescent substance abuse treatment literature (e.g., the correlates of adolescent drug and alcohol treatment success.) Because JDCs commonly incorporate drug and alcohol treatment, the available research on factors related to outcomes of adolescent drug and alcohol treatment programs per se might prove to be helpful in identifying target variables in studies of JDC outcomes.

Adolescent Substance Use/ Abuse Risk Factors

Finally, a review of what is known about risk factors for adolescent substance use

disorders may shed some light upon variables that increase or decrease an adolescent's chances of recovering from substance abuse problems following interventions, including JDCs. It is known, for example, that risk factors seem to be additive or cumulative in terms of predicting substance abuse problems and, in turn, the likelihood of recovery (Hawkins, Lishner, Catalano, & Howard, 1986). Of particular interest will be variables that occur across the aforementioned bodies of research.

Specification of Variables That May Relate to Juvenile Drug Court Outcomes

In the sections of the literature review that follow the JDC participant variables that are hypothesized be related to outcome are reviewed. As noted in the section of this review presented above, several bodies of research provide data from which educated speculations about the relationships between participant characteristics, attributes, and outcomes can be generated. Two clusters of variables that may relate to JDC outcomes are discussed. First, a family of demographic variables include: (a) age, (b) family income, (c) ethnicity, and (d) gender. Second, a family of substance use history variables include: (a) drug of choice, (c) frequency of use, (c) severity of substance use problem, (d) previous drug and alcohol treatment, and (e) age at first use. Also, a rationale for including JDC graduation status as the primary outcome variable will also be presented. The potential value of each of the aforementioned variables, as possible predictors of JDC outcome will be justified by selectively referencing one or more of the bodies of adolescent risk factor, treatment outcome, or the adolescent and adult drug court literature introduced above. Finally, a summary of research focusing on the use of

graduation versus nongraduation status as the most prevalent outcome measure in drug court research will be provided. Such a discussion will serve to justify its application in future studies of juvenile drug courts.

Demographic Variables

Age

Age has been found to significantly relate to adolescent substance use, adolescent treatment, and drug court outcomes. However, the findings within the various bodies of literature are not conclusive regarding the direction of this relationship. The variability in the literature may be explained by a curvilinear relationship between age and outcome, with the youngest and oldest participants less likely to graduate.

Juvenile drug courts generally accept participants between the ages of 14 and 18. However, 56% of JDC participants are between the ages of 16 and 17 (OJP Drug Court Clearinghouse and Technical Assistance Project, 2001). Thirty-seven percent of all JDC participants are between the ages of 14 and 15, while only 7% of the participants are under the age of 14.

One JDC evaluation found a curvilinear relationship between age and successful completion of the program. Participants who were under either 14 or over 18 were more likely to graduate (Shaffer, Latessa, Pealer, & Taylor, 2002). However, this particular JDC accepted a broader age range of participants than most JDCs in the United States. Another JDC evaluation found that older participants were more likely to successfully complete the program than younger participants (Carey, 2004). Participants in the Carey study ranged in age from 14.43 to 17.90, with a mean age of 16.12 at time of JDC

referral. It is possible that this researcher would have also found a curvilinear relationship between age and graduation status if the JDC had admitted participants who were younger than 14 at the time of intake.

In adult drug courts, on the other hand, a consistent finding is that younger offenders are significantly more likely to be arrested during follow-up than older participants (Peters, Haas, & Murrin, 1999). In a review of Texas drug court programs, older participants were more likely to graduate (Martinez & Eisenberg, 2002). However, it is unclear whether these adult drug court findings will generalize to an adolescent drug court population.

Neither the adolescent treatment nor teen risk factor literature appear to contribute to educated speculations one might make about the possible relationship of age to JDC outcomes. Although a younger age of onset is linked to greater risk for substance use disorders (reviewed later), there exists no consistent association between age and treatment outcomes.

Family income

The SES of a participant's family may relate to JDC outcome, although speculation about this relationship is based on a mixed pattern of literature. For example, Spooner (1999) concluded that there is discrepancy in the literature concerning the effects of SES on adolescent drug and alcohol use/abuse. Socioeconomic status has been shown in several studies to have no significant correlation with adolescent substance use disorders (Swaim, 1991; Thomas, 1996). However, other researchers in the field disagree. For example, Hawkins, Catalano and Miller (1992) in a review of the literature,

have concluded that low SES is a risk factor for substance use problems. This conclusion was supported by Williams, Ayers, Abbott, Hawkins, and Catalano (1999), who also found that low SES is a risk factor for both delinquency (in general) and substance use in adolescence. Also, Smart, Adlaf, and Walsh (1994) found that low-income neighborhoods had higher overall rates of adolescent substance abuse. However, these authors also found that middle-class neighborhoods had higher rates of alcohol abuse, but much lower rates of drug use.

Socioeconomic status has been linked to increased recidivism and delinquency (Cottle, Lee, & Heilbrum, 2001). Because re-offending is a primary reason for termination from JDCs increased risk for re-offending should be related to increased risk for termination from JDC. Researchers have also found that adolescents in high-SES areas are less likely to engage in serious or violent delinquency during adolescence (Beyers, Loeber, Wikstrom, & Stouthamer-Loeber, 2001).

Interestingly, no adult or JDC studies have examined the question of the association between SES and JDC outcome to date. Intuitively, family income may interact with the high demands of the JDC (e.g., weekly individual, group, and family therapy sessions, frequent urinalysis testing, etc.) and make it more or less difficult for the adolescent to complete the necessary requirements for graduation. However, this remains an empirical question.

Ethnicity

Ethnicity is another demographic variable that one might speculate could interact with JDC efficacy. The ethnic composition of JDCs around the United States is diverse.

Some JDCs have reported that more than 80% of participants in the programs were Caucasian (Anspach, Ferguson, & Phillips, 2004; Brown & Latessa, 2002; Huff, Stagebert, Wilson, & Moore, 2002; Shaffer & Latessa, 2002). However, a broader national analysis of 53 JDC programs reports that only 47% of all participants are Caucasian, with the next highest category being African American at 35% (OJP Drug Court Clearinghouse and Technical Assistance Project, 2001). Nationally, approximately 15% of JDC participants are Hispanic (OJP Drug Court Clearinghouse and Technical Assistance Project). Qualitative differences between JDCs enrolling over 80% Caucasian participants and JDCs enrolling less than 50% Caucasian participants may explain the minor differences in JDC outcomes.

One JDC in Arizona found that Hispanic youth were more likely to recidivate during drug court treatment (Rodriguez & Webb, 2004). Because recidivism is clearly related to early termination, it can be assumed that in this JDC, Hispanic youth were at greater risk for poor graduation outcomes. Also, in the Arizona JDCs studied to date, Hispanic participants are less likely to graduate than any other ethnic group (LeCroy & Milligan Assoc., 2003). Shaffer and colleagues (2002) found that White participants were more likely to complete JDC than ethnic minorities. In the Delaware JDCs ethnic minorities were more likely to recidivate during treatment (Miller, Scocas, & O'Connell, 1998). Relatedly, Kier (2002) found that African American youth are also more likely to chronically recidivate than teens from other ethnic groups after a referral to the juvenile justice system. Based on the limited JDC literature available, it seems as though Caucasian youth are more likely to graduate from drug court than adolescents from other ethnic groups.

Ethnicity has also been found to be significantly related to outcome in the adult drug court system (Butzin et al., 2002; Hartley & Phillips, 2001; Martinez & Eisenberg, 2002). Butzin and colleagues found that Caucasian participants were more likely to graduate from adult drug court when compared with African American participants. Martinez and Eisenburg found that both Hispanic and Caucasian participants are more likely to graduate from drug court than are African American participants. However, in one adult drug court in Kentucky, African American participants were more likely to graduate than participants from other ethnic groups (Vito & Tewksbury, 1998). This difference in findings between juvenile and adult drug courts might be explained by the principle that ethnic minorities may have different onset and progression patterns towards substance abuse than do Caucasians (Caetano & Kaskutas, 1996). For example, epidemiological studies of adolescents find that being Caucasian is a risk factor for substance abuse (Kilpatrick et al., 2000; Maddahian, Newcomb, & Bentler, 1988), while similar studies of adults find that members of many ethnic minority groups report higher rates of substance abuse than do Caucasians (Caetano & Clark, 1998a, 1998b).

In general, African American and Hispanic adolescents are more likely to be referred to substance use treatment by the justice system than their Caucasian counterparts, who are more likely to be referred by friends and family (Farabee, Shen, Hser, Grella, & Anglin, 2001). This may mean that ethnic minority youth have more severe substance use problems upon entry into treatment than Caucasian youth. However, in the Drug Abuse Treatment Outcome Studies (DATOS-A), a national study of adolescent treatment, Caucasian adolescents were more likely to continue criminal activity after drug and alcohol treatment when compared to African American

participants (Farabee et al., 2001). This finding seems to contradict the findings in the JDC literature, which seem to predict that Caucasian youth will graduate at higher rates. However, although Caucasian youth are more likely to commit crimes following treatment, ethnic minority youth are more likely to be arrested (Human Rights Watch, 2000; Villaruel et al., 2002). Gregory, Brown, Garland, and Hough (2004) also found that ethnic minority youth were more likely to be involved in the juvenile justice system and to have more restrictive forms of substance abuse treatment in spite of having less severe substance use problems.

Most of the adolescent substance-use risk factor literature suggests that Caucasian adolescents have been found to be at higher risk for substance use disorders (SUDs) than African American or Asian adolescents (Kilpatrick et al., 2000; Maddahian et al., 1988). However, some researchers have found that African American and Caucasian adolescents share similar risk pathways to abuse (Williams et al., 1999). Armstrong and Costello (2002) found that although African American adolescents are less likely to abuse substances when they evidence comordid mental health diagnoses. McCuller, Sussman, Dent, and Teran (2001) found that Caucasian and unacculturated Hispanic adolescents were at the greatest risk for severe drug abuse. Caucasian adolescents are also more likely than other ethnic groups to meet DSM criteria for substance use disorders (Farabee et al., 2001). However, one study conducted in Utah found that having nonminority status was a protective factor for adolescent substance use (Vakalahi, 1999) and that having minority status put adolescents at risk for substance use. This finding may not generalize beyond Utah, but may affect the findings of a JDC study conducted in that state.

Although, in general, Caucasian adolescents are at greater risk for developing SUDs during adolescence, it seems as though they also have a better prognosis once enrolled in JDCs. This may be due to the fact that the drug court treatment model is more culturally appropriate for Caucasians. It may also be due to the fact that ethnic minorities are arrested at higher rates than Caucasian youth. Re-arrest is a primary reason for early termination from JDCs and would significantly affect graduation status.

Gender

Being male may be a risk factor for poor prognosis in the JDC system. Across the 53 JDCs included in the OJP Drug Court Clearinghouse and Technical Assistance Project (2001), 82% of the participants were male. One JDC found that male participants were more likely to recidivate during drug court, which would increase their chances of being terminated prematurely (Rodriguez & Webb, 2004). The JDCs of the state of Delaware (Miller et al., 1999) suggested such a trend, though the findings were not statistically significant. Relatedly, adolescent males are more likely to recidivate after a criminal referral than their female counterparts (Kier, 2002). Because committing another crime is one reason that juveniles are terminated from drug court, being male may be a risk factor for premature termination from these treatment programs. In a review of adult drug courts, Cooper (2003) concluded that when daycare and other special services were provided, females graduated at higher rates than their male counterparts. However, she also reported that females in drug courts usually have more extensive substance abuse histories than their male counterparts.

Two reviews of the adolescent substance use risk factor literature have shown that, consistently, males are at higher risk than females for both substance use disorders and delinquency (Hawkins et al., 1986, 1992). Warner and White (2003) also found that being male was a risk factor for becoming a problem drinker. Other researchers (Hawkins et al., 1997) have found that gender is a significant factor in substance use/abuse during adolescence. Lui and Kaplan (1996) found that gender was significantly related to an earlier onset of substance use, which has been found to be predictive of later substance use problems.

Latimer, Winters, Stinchfield, and Traver (2000b) found that being male was a risk factor for poor outcomes from adolescent drug and alcohol treatment programs. However, Latimer et al. (2000b) found that being female was no longer predictive of positive outcome following standard drug and alcohol treatment once treatment and other psychosocial factors were statistically accounted for. Toray, Coughlin, Vuchinich, and Partricelli (1991) found that adolescent female addicts are qualitatively different from their male counterparts and, therefore, might benefit from different treatment modalities. This might explain why there is not a large discrepancy in the JDC literature thus far between male and female graduation rates. In summary, each of the aforementioned bodies of related research seem to suggest that males may have a higher risk of terminating prematurely from JDCs.

Substance Use History

Drug of Choice

There may be a relationship between the type of drug(s) that a participant uses

most frequently and outcome from JDC, with alcohol and marijuana use predicting more positive outcomes than for youths that choose drugs such as cocaine and heroine as their primary drug of choice.

Some evaluators of JDCs report the most common "drug of choice" for the JDC participants (Anspach et al., 2003; Brown & Latessa, 2002; Clackamas County, 2004; Latessa, Shaffer, & Lowencamp, 2002; LeCroy & Milligan Assoc., 2003; O'Connell & Wright, 2000; Thompson, 2001). However, several drug court evaluations were reviewed that did not include information on the participants' drug of choice.

Drug of choice is defined as the drug most commonly used by a participant. Eight of the nine studies cited above reported that marijuana was the overwhelming drug of choice for the majority of the drug court participants. However, one study, evaluating North Dakota's JDC programs (Thompson, 2001), reported that alcohol was the most common drug/ substance used by the participants. This is interesting considering that North Dakota JDCs reported clearly positive program evaluation results, (which is not true for several of the other cited evaluations). Further studies may profitably explore the relationship between drug of choice and treatment success in JDCs.

One JDC evaluation found that participants who listed marijuana as their drug of choice were less likely to complete drug court than those who listed alcohol (Thompson, 2001). Another JDC evaluation found that participants who specifically chose methamphetamine as their first drug of choice and alcohol as their second drug of choice were less likely to graduate from drug court (Carey, 2004). This same evaluation found that the use of multiple drugs, as opposed to one specific drug, was predictive of poor outcomes.

Also, in adult drug courts, participants whose drug of choice is alcohol or marijuana are more likely to graduate than those whose drug of choice is cocaine (Peters et al., 1999). Type of substance used has not been examined as a predictor of outcome in the treatment or risk factor literatures. However, in general, the available drug court research suggests that JDC outcomes might be related to a participant's stated drug of choice.

Severity of Substance Use Problem

A participant's severity of substance use, on the continuum from use to abuse to dependence, may predict their prognosis following admission to JDC. A curvilinear relationship between this complex variable and outcome, with the least severe and most severe substance users benefiting most from the program, may explain some of the discrepancy in the literature.

LeCroy and Milligan Associates (2003) found that in the Arizona state JDCs, participants with higher severity of use were less likely to graduate from drug court. In a study examining predictors of success in adult drug courts,Peters and colleagues (1999) found that the factor that best predicted outcome was severity of drug/alcohol use. Cottle and colleagues (2001) found that although substance use was not related to recidivism during adolescence, substance abuse was related to increased recidivism in adolescent. Therefore, severity of use may be related to increased recidivism in the JDCs, which would relate to increased terminations.

In a national study of juvenile drug and alcohol treatment, severity of drug/alcohol use was negatively correlated with retention in treatment (Galaif, Hser,

Grella & Joshi, 2001). However, Latimer, Newcomb, Winters, & Stinchfield (2000a) found that a higher severity of substance use problem did not predict outcome following general adolescent drug and alcohol treatment. These authors concluded that adolescents with severe substance use problems were just as likely to complete and benefit from treatment as adolescents with less severe problems.

How often a participant was using drugs/alcohol prior to entering the JDC, another variable related to substance use severity, may also help predict graduation status in JDCs. Empirical support for further study of this variable as a predictor of JDC outcomes is limited. However, frequency of drug and alcohol use was significantly correlated with outcome (graduation vs. termination) in one adult offender drug court program (Butzin et al., 2002); that is, less frequent users were more likely to graduate. It is unclear whether this finding will generalize to the JDC population. Farabee et al. (2001) also found that a reduction in the frequency/amount of use was the only variable that related to adolescent recidivism. This suggests that frequency of use is related to important outcome variables in JDCs.

The adolescent treatment and risk factor literatures generally do not explore severity or frequency variables, because a high severity/frequency of use is considered to be a diagnostic prerequisite for substance abuse, rather than a risk factor. Further, severity of use variables have not been explored in JDCs to date. However, based on the limited research from the adult drug courts, there is reason to believe that frequency of use, as a measure of severity, may be related to JDC outcomes.

Previous Drug and Alcohol Treatment

Whether or not a JDC participant has had previous exposure to drug and alcohol treatment may help to predict JDC outcomes. Interestingly, participants who have received substance abuse treatment before entering the drug court appear to be more likely to have negative outcomes.

Nationally 69% of JDC participants have had no prior drug and alcohol treatment before entering the drug court program (OJP Drug Court Clearinghouse and Technical Assistance Project, 2001). This variable has not been linked to outcome in the JDC literature. However, Festinger, Marlowe, Kirby, Bovasso, and McLellan (2002) found that adult drug court participants who had attended drug and alcohol treatment(s) previously actually needed more frequent meeting with the judge if they were to succeed in remaining abstinent. This finding suggests that had they not received this special treatment in the drug court they would not have completed the program. Because most JDCs do not take treatment experience into account when planning treatment, it is clear that participants who have been to drug and alcohol treatment before entry into the JDC will not receive the necessary special treatment they need and, therefore, will be less likely to graduate from the JDC.

Though the treatment and risk factor literatures do not address this question, intuitively, having already failed to recover following a previous attempt at treatment might be a risk factor for poor outcomes following drug court treatment. However, there may be cumulative effects of treatment, which might make it more likely for those with previous exposure to treatment to have positive outcomes. Therefore, it is unclear whether having previous treatment experience will affect JDC graduation status. If it

does affect the outcome, it is unclear whether the relationship will be positive or negative.

Age at First Use

The age at which an adolescent first began to use substances may predict outcomes of JDCs. An earlier age of first use may predict poor outcomes. Nationally, 42% of JDC participants report that they began using at age 12 or younger (OJP Drug Court Clearinghouse and Technical Assistance Project, 2001). The most common age of first use reported nationally is 13, which appears to involve about 24% of JDC participants nationally (OJP Drug Court Clearinghouse and Technical Assistance Project). However, the effect of age at first use on outcome has not been determined for JDC participants or adult drug court participants.

Early initiation into drinking and drug use is considered to be a major risk factor for drug abuse and antisocial behavior (Hawkins et al., 1986). Warner and White (2003) also found that youth who drank at an earlier age were more likely to become problem drinkers than those who began drinking later. Also, Sung, Erkanli, Angold, and Costello (2004) found that adolescents who began drinking before the age of 13 were at increased risk of developing a substance use disorder, while adolescents who began drinking after age 14 were at considerably less risk. In a longitudinal study of adolescent use, Hawkins et al. (1997) found that an earlier onset of use was significantly related to a much higher level of use at ages 17-18. In a study of college-age drinking, Gonzalez (1989) found that young adults who began drinking during elementary or middle school were more likely

to have substance use related problems than those who began drinking in high school or college.

Relatedly, a study looking at adult alcohol and drug treatment found that participants who listed their age at first use as less than 12 years old were more likely than those who began using substances after age 12 to have been in treatment many times (DASIS Report, 2005). This suggests that an earlier age of onset might predict a poor treatment prognosis.

The Use of Graduation Status as a Key Outcome Variable in Studies of JDC Effectiveness

The use of graduation status as an outcome in drug court studies or evaluations is not common. The use of urinalysis testing and recidivism data is more common. However, the use of graduation versus termination from drug court as a measure of JDC outcome is supported by findings in many studies that show that graduates of drug courts, in general, have a range of more positive outcomes compared with nongraduates. Although JDCs have been successful in reducing recidivism in a high-risk population that is very likely to re-offend following any type of treatment/incarceration (Sloan et al., 2004), significantly lower rates of recidivism are found among drug court graduates compared to drug court nongraduates (Anspach et al., 2003; Cooper, 2003; Finigan, 1998; Miller et al., 1998; National Association of Drug Court Professionals, 2004; Peters et al., 1999; Shaw & Robinson, 1998).

Participants who are terminated prematurely from drug court are usually incarcerated and receive the sentence that they would have received had they not

attended drug court (Cooper, 2003). The most common reasons for drug court terminations are new drug or alcohol use, missed court appearances, missed treatment appointments, upon recommendation of the treatment provider, or a new arrest (Cooper). Participants are usually terminated from the program by the judge who oversees the drug court. Drug court participants are usually required to remain drug free, stay in drug court for a specified length of time, make treatment gains according to the provider, and to reintegrate into the community in order to graduate from the program (Cooper).

In a review of adult drug court outcome studies Belenko (2001) concluded that outcomes were better for drug court graduates than for those who were terminated prematurely from treatment. A review of Texas adult drug courts found that 11% of drug court noncompleters were reincarcerated at a 2-year follow-up, while no drug court graduates were reincarcerated during that time (Martinez & Eisenberg, 2003). In this same outcome study, 10.2% of drug court graduates had been rearrested, while 44.9% of those who did not complete the program had been rearrested at the 2-year follow-up. Thus it is clear that graduates of drug courts are less likely to end up back in the justice system.

In an evaluation of the JDCs of Arizona, graduates were compared to nongraduates (LeCroy & Milligan Assoc., 2003). Graduates were found to have significant reductions in both substance use and recidivism during the year of the drug court program when compared to nongraduates.

Belenko et al. (1998) concluded that retention is a major predictor of success following drug and alcohol treatment. Assuming that only the approximately 50% of juvenile participants who graduate from drug court have clearly positive outcomes, it is

becoming increasingly important for treatment providers to have a better understanding of this target population. Drug courts need to begin identifying those individuals who will most benefit from this type of treatment in order to increase the retention rates of JDC programs.

Taken together, the treatment and risk factor literatures do not provide a rationale for using graduation versus termination as an outcome variable in JDC research, because this would not be a meaningful outcome variable in these bodies of literature. However, the combined juvenile and adult drug court research do provide support for the use of graduation status as an outcome in studies examining JDC effectiveness, because graduates of drug courts clearly have better outcomes than nongraduates.

Conclusion

A rationale for assessing the relationship between demographic and substance use variables (gender, ethnicity, drug severity of substance use problem, and age at first use) and JDC outcomes can be found in the bodies of research literature reviewed. However, some of these variables may have been included in a wide range of studies due to the convenience of identifying them in study participants. Other variables such as family income, drug of choice, and having been to previous substance abuse treatment, may also be important variables to consider in attempting to predict JDC outcomes. However, they are more difficult or expensive to assess and, therefore, are included in relatively fewer studies. On the other hand, variables such as age at time of entry into the JDC program may have more complex relationships with outcome and therefore, have evidenced mixed results in the literature. Nonetheless, a rationale for including each of

the aforementioned variables in a study to predict outcomes of JDCs has been found in the review of the literature above. Finally, a summary of the research on drug court graduation versus nongraduation status as a key outcome measure was presented in order to help justify its use in future drug court outcome studies.

Purpose and Objectives

The purpose of this study was to determine if JDC graduation status could be predicted from participant variables known to clinicians at intake into the drug court. Such predictive ability would aid JDCs in making placement decisions, treatment planning, and achieving higher retention rates. The specific research questions addressed in this study were as follows:

1. What participant demographic variables relate to outcome in JDCs?
    a. Does age relate to outcome in JDCs?
    b. Does ethnicity relate to outcome in JDCs?
    c. Does the income level of a participant's family relate to outcome in JDCs?
    d. Does gender relate to outcome in JDCs?
    e. Does some combination of demographic variables best predict JDC graduation status?
2. Does the substance use history of a participant predict outcome in JDCs?
    a. Does the stated drug of choice of a participant relate to outcome in JDCs?
    b. Does the frequency of substance use relate to outcome in JDCs?

c. Does the absence of previous substance abuse treatment relate to outcome in JDCs?

d. Does the age at first substance use relate to outcome in JDCs?

e. Does some combination of substance use related variables best predict JDC graduation status?

3. Do scale scores on the SASSI-A predict graduation status in JDCs?

4. Does some combination of the above-mentioned demographic and substance use related variables best account for the variability in outcome in JDC programs?

CHAPTER III

METHODS

Participants

A total of 95 JDC participants were included in this study. Only the participants of the Davis County Juvenile Drug Court (located in northern Utah), who had either completed or been terminated from the program from the time that the Davis County JDC began in the summer of 2002 to the time of data collection in the winter of 2006, were included in the analysis. Participants who were currently enrolled in the Davis County JDC at the time of data collection were not included in the analysis because it was unknown whether these participants would successfully complete the program. Only participants whose files could be located at Davis County Behavioral Health (DCBH), the site of all Davis County JDC psychological services, at the time of data collection were included in the analysis.

Participants' age at entry into the JDC ranged from 14 to 17. The average age at entry of the JDC participants was 16.15 (SD = 0.91). The majority of the participants were male (n = 65, 68.4%). Additionally, the majority of participants were Caucasian (n = 84, 88.4%). Hispanic participants accounted for 8.4% of the sample (n = 8), while African American participants accounted for only 2.1% of the sample (n = 2). The mean income per month for the JDC participants' families was $2,699.53 ($SD$ = $1,840.78) and ranged from zero dollars per month to $10,000 per month. The average amount earned by the entire family of the participants in this study is barely above the average earning per person of $23263.17 per month in Davis County, Utah (U.S. Census, 2004).

The most common drug of choice chosen by the JDC participants was marijuana, which accounted for 65.3% of the population (n = 62). Alcohol was the second most common drug of choice (n = 19, 20%). Amphetamines were chosen as the drug of choice by 10.5% of the population (n = 10). Opiates, narcotics, hallucinogens, and other drugs were each chosen as the drug of choice by one JDC participant and each account for 1.1% of the population.

Thirty-six participants (37.9%) reported at JDC-intake that they had not used alcohol or other drugs within the previous 30 days. Other participants reported that they had been using substances less than once per month before entry into the program (n = 3, 3.2%), while others reported using 1-3 times per month (n = 9, 9.5%). Of the participants, 12.6% (n =12) reported using substances once per week before entry into the program, while 8.4% of the participants (n = 8) stated that they had been using substances 2 - 4 times per week. Twenty-five of the JDC participants (26.3%) reported that they had been using alcohol or other drugs daily prior to entry into the JDC program. Fifty-one of the JDC participants (53.7%) had never had any type of substance use treatment prior to admission into the Davis County Juvenile Drug Court, while 42 of the participants (44.2%) had been to some type of drug and alcohol treatment before.

Procedures

The current study utilized existing drug court data from the Davis County JDC Program in Layton, Utah. The Davis County JDC collaborated in this effort by providing a list of participants who had been graduated or terminated from the program and access to their files.

Similar to JDCs nationwide, the Davis County Juvenile District Court program is typically completed in 12 months, with four phases of decreasing involvement. Participants are required to make progress in therapy (as perceived by their counselor), complete all four phases of the program, complete specific treatment goals, and have no new legal involvement in order to graduate from the program. Upon intake into the Davis County JDC program, participants and their primary caregiver(s) participate in a semi-structured intake interview with a counselor at DCBH. During this intake, information is obtained regarding the reason for referral to the drug court, personal history, family history, living situation, demographic information, substance use history and legal history, and so forth. At intake, each participant also completes the Substance Abuse Subtle Screening Inventory--Adolescent Version (SASSI-A), a measure designed to measure substance use disorder symptoms and related variables.

The file of each participant was extensively reviewed at DCBH by the primary researcher in order to obtain demographic information and other variables of interest in the present study. Most of the variables were found in the intake report located in the subject's file. Other variables were found included in intake paperwork completed by the participant and their primary caregivers and on the self-report measure filled out by the participant. Only information known at the time of intake (other than graduation vs. termination status) was included in the data collection in order to further the ability of JDC treatment providers to make admissions decisions based on intake information. All file information (including name, social security number, and birth date) that could identify the adolescent participants or their families was removed at DCBH. DCBH staff

planned to create and keep a master list that linked participants to their participant ID number, for the purposes of further evaluation.

There was very little missing data in the records. Two files did not include data on frequency of use and existence/absence of previous treatment. One file did not include the subject's ethnicity and another file did not include the family income. Thirteen files did not include SASSI-A2 measures.

The collected data was shared with the Davis County Juvenile Drug Court program in order to aid them with their upcoming process evaluation. Any analyses conducted by the program will not be published in scholarly journals.

Measures

All variables were coded based on information contained in each participant's intake report written by a therapist at DCBH, intake paperwork filled out by the participant or their primary caregiver, and the participant's disposition report. Table 1 contains information explaining how each variable was coded.

The SASSI-A2 is designed to assess the level of substance abuse in adolescents regardless of their defensiveness (Rogers, Cashel, Johansen, Sewell, & Gonzalez, 1997). The measure is designed and normed for individuals ages 12 - 18 and includes 81 questions. The measure requires a fourth-grade reading level and takes approximately 15 minutes to complete. The first half of the questionnaire is designed to be face valid and obviously relates to substance use. The second part, however, includes more subtle items that do not obviously relate to substance abuse problems. This measure is designed to identify adolescents with SUDs, as well as those who are at risk. The Substance Abuse

Table 1

Variables and Coding Methods

Variable measured	Coding method
Outcome	Graduation versus termination. Determining graduation status was straightforward, as it was clearly reported in the participant's disposition report located in their file.
Age	Age was recorded, in years, at time of entry into JDC program. Age was collected by subtracting date of birth from date of entry into the JDC program.
Family income	Primary caregiver(s) stated income per month rounded to the nearest 100 at time of entry into JDC program; primary caregiver was the adult that the adolescent participant lived with at the time of intake. If there was a shared-custody agreement for the participant, both incomes were included.
Ethnicity	Ethnicity was coded for Caucasian, Hispanic, African American, Asian/Pacific Islander, or other. Ethnicity was also coded as Caucasian and non-Caucasian, due to the low numbers of ethnic minorities in the sample. It is unclear how the intake therapist determined ethnicity.
Gender	Male or female. It is unclear how the intake therapist determined gender.
Drug of choice	Participants were asked to choose a preferred drug at intake into program. Polysubstance users were asked to indicate which drug they would chose above all others. Drug of choice was coded for alcohol, marijuana, and other drugs. Drugs other than alcohol or marijuana drugs were combined, due to low numbers of participants choosing them as their primary drug of choice.
Frequency of use	Participants were asked to rate their frequency of use at intake. The same rating scale will be used for analysis. The frequency scale ranges from no substance use in the last 30 days to daily substance use.
Severity of use	Measured by the SASSI-A2.
Previous drug and alcohol treatment	Yes or no, taken from intake report.
Age of first drug alcohol use	Participant self-report at intake, recorded in years.

Subtle Screening Inventory-Third Version (SASSI-3), which is designed for use with adult populations, was found to have above 90% sensitivity and specificity with substance abusing populations (Lazowski, Miller, Boye, & Miller, 1998). The validity of the Substance Abuse Subtle Screening Inventory-Adolescent Version (SASSI-A), created by the same researchers, has also been supported (Coll, Juhnke, Thobro, & Hass, 2003; Risberg, Stevens, & Graybill, 1995; Rogers et al., 1997). The accuracy and specificity of the SASSI-A, when attempting to correctly identify adolescent substance users/abusers, was supported even after accounting for gender, age, and SES (Risbert et al.). Coll et al. found that the SASSI-A was more successful at identifying at-risk and substance abusing adolescents from an offender population than traditional methods (court referrals). No studies have yet been published on the psychometric properties of the SASSI-A2. However, only minor changes were made between the SASSI-A and the SASSI-A2.

The SASSI-A2 includes 12 scales that are designed to determine if an adolescent is substance use dependent (Miller & Lazowski, 2001). Seven of the scales were included on both the SASSI-A and the SASSI-A2. Two scales, face valid alcohol (FVA) and face valid other drug (FVOD), summarize the face valid half of the questionnaire. The obvious attributes (OAT) scale summarizes items that relate to characteristics that are normally associated with substance abuse. The subtle attributes (SAT) scale, on the other hand, combines the scores for items that relate to characteristics that relate to substance abuse, but are not commonly associated with it. The defensiveness (DEF) scale is designed to determine whether the individual is using a defensive response set on the measure. The supplemental addiction measure (SAM) scale replaced the DEF2 scale that was included in the original version of the SASSI-A. The SAM scale is included as a

supplemental measure of an adolescent's defensiveness. The SAM scale was designed to distinguish highly defensive adolescents with substance use problems from highly defensive adolescents who are not having substance use problems. This scale was designed for use in conjunction with the DEF scale. The correctional (COR) scale is designed to identify individuals with response patterns similar to those of individuals with extensive legal difficulties.

Five new scales were added to the updated SASSI-A2 (Miller & Lazowski, 2001). The family and friends risk scale (FRISK) is designed to measure the extent to which the adolescent is a part of a social environment that puts him/her at risk for substance abuse. The attitudes toward substance use (ATT) scale is designed to measure an adolescent's attitudes and beliefs about substance use. The symptoms of substance misuse (SYM) scale is designed to measure consequences of substance misuse. The (VAL) validity check scale identifies individuals who may need further evaluation, in spite of scoring in a normal range for substance use problems. The last scale on the SASSI-A2 is the secondary classification (SCS) scale. This scale is designed to distinguish between substance abuse and dependence for the purposes of diagnoses.

CHAPTER IV

RESULTS

Demographics and Characteristics of the Sample

Because the demographic and substance use characteristics of this sample have already been described (above in participants section), Tables 2 and 3 are included as a brief summary.

Table 2

Participant Characteristics

Variable	%/*n*	%/*n*	%/*n*	%/*n*	%/*n*
Gender	Male = 68.4/65	Female = 31.6/30			
Ethnicity	Caucasian = 88.4/84	Hispanic = 8.4/8	Black = 2.1/2	Missing = 1.1/1	
Drug of choice	Marijuana = 65.3/62	Alcohol = 20/19	Amphetamines = 10.5/10	Other = 4.2/4	
Frequency of use	0 in last 30 days = 37.9/36	< Less than 1 month = 3.2/3	1-3 month = 9.5/12	2-4 week = 8.4/8	Daily = 26.3/25

Table 3

Participant Characteristics

Variable	Mean	Standard deviation	Minimum	Maximum
Age	16.12	.97	13	17
Income per month	$2,699.53	$1,840.78	$0.00	$10,000
Age at first use	12.91	2.04	5	16

Graduation Rates for Sample

The graduation rate for this JDC sample was 50.5% at the time of data collection. This is very typical of graduation rates for JDCs nationwide, considering that the national graduation rate is approximately 50% (OJP Drug Court Clearinghouse Project, 2001). The average length of treatment among the JDC participants in this sample was 10.11 months ($SD = 4.78$).

Research Question #1

The first research question in this study sought to examine the relationship between demographic variables (age at entry into JDC, gender, ethnicity, and family income) and outcome (graduation status) of JDCs. Either chi-square or ANOVA analyses were conducted to examine the relationship between each of these variables and graduation status individually. Next, backward stepwise logistic-regression analyses were used to determine whether some combination of demographic variables could significantly predict outcome of JDCs.

Age. The relationship between age at entry into the drug court and graduation status was explored using an ANOVA. However, based on this sample, there was not a significant relationship between age and outcome, $F(1, 93) = 1.34$, $p = 0.25$.

Ethnicity. Chi-square analysis was conducted to determine the difference in completion rates between Caucasian and minority participants. Due to the low numbers of ethnic minority participants in this sample, ethnicity in this analysis was coded as Caucasian and non-Caucasian, rather than as Caucasian, Asian, Hispanic, and African

American. Significant differences in completion rates between Caucasian and minority participants were not found in this sample, $\chi^2\{1\} = 1.79, p = 0.31$ (2-sided).

Income. An ANOVA was conducted to explore the relationship between stated family income (per month) and graduation status in JDCs. However, a significant relationship between these variables was not found, $F(1, 92) = 2.20, p = 0.14$.

Gender. Chi-square analysis was conducted to determine if males or females graduated from the JDC with significantly higher rates. However, significant differences in outcome were not found based on gender, $\chi^2(1) = 1.57, p = 0.27$ (2-sided), $p = 0.15$ (1-sided).

Demographic variables. Backward stepwise logistic-regression analysis was used to determine which combination of the above-mentioned demographic variables would best predict graduation from JDC. However, no model containing a combination of the above-mentioned variables was found that significantly predicted graduation from drug court with an acceptable degree of confidence ($p = 0.10$). Table 4 displays the results of the backward stepwise logistic-regression for the prediction of outcome using demographic variables.

Research Question #2

Research question #2 explores the relationship between substance use variables (drug of choice, age at first use, frequency of use, and previous substance abuse treatment) and outcome (graduation status) of JDC. Where appropriate, chi-square or ANOVA analyses were conducted to explore the relationships between these variables and outcome individually. Next, backward stepwise logistic-regression analysis was

Table 4

Logistic Regression Analysis of Demographic Variables

Step	Variable	*B*	S.E.	*df*	Sig.	Odds ratio	R^2
1	Age	.37	.24	1	.12	1.45	.11
	Gender	.47	.47	1	.32	1.60	
	Ethnicity	0.92	.76	1	.22	.40	
	Income	0.02	.01	1	.09	.98	
	Constant	-5.41	3.80	1	.16	.004	
2	Age	.40	.24	1	.10	1.49	.10
	Ethnicity	-.87	.75	1	.25	.42	
	Income	-.02	.01	1	.06	.98	
	Constant	-5.65	3.80	1	.13	.004	
3	Age	.443	.24	1	.13	1.56	.08
	Income	-.02	.01	1	.06	.98	
	Constant	-6.48	3.75	1	.08	.002	
4	Income	-.02	.01	1	.16	.98	.03
	Constant	.47	.38	1	.22	1.60	
5	Constant	.02	.20	1	.92	1.02	.00

conducted to determine whether a combination of these variables would best predict graduation from JDC.

Drug of choice. Chi-square analysis was employed to determine if participants with a particular stated drug of choice (alcohol, marijuana, or other drug) graduated at higher rates from the JDC than others. However, participants did not graduate at significantly different rates based on stated drug of choice, χ^2 (2) 0.74, $p = 0.68$.

Frequency of substance use. An ANOVA was conducted to determine the relationship between a participant's self-reported frequency of use prior to entering the

drug court and graduation status. However, there was not a significant difference found between graduates and nongraduates with regards to frequency of use, $F(1, 91) = 2.26$, $p = 0.13$.

Previous substance use treatment. Chi-square analysis was conducted to determine whether participants who had previously attended substance abuse treatment graduated at higher rates from JDC than participants who had not or vice versa. However, significant differences in graduation rates were not found based on the existence or absence of previous substance use treatment, χ^2 (1) .48, $p = 0.53$.

Age at first substance use. An ANOVA was conducted to determine the relationship between a participant's stated age at first substance use and graduation status. There was not a significant relationship found between these two variables, F(1, 93) = 1.87, $p = 0.18$.

Substance use related variables. Although no significant relationships were found between individual substance use variables and outcome, backward stepwise logistic-regression analysis was used to determine if some combination of these variables would significantly predict outcome in JDCs. However, no combination of these variables was able to predict graduation status with an acceptable level of statistical significance ($p = 0.10$). Table 5 displays the results of the backward stepwise logistic-regression for the prediction of outcome using substance use related variables.

Research Question #3

Research question #3 explores the relationship between the SASSI-A2 and JDC graduation status. Backward stepwise logistic-regression analysis was conducted to

Table 5

Logistic Regression Analysis of Substance Use Variables

Step	Variable	*B*	S.E.	*df*	Sig.	Odds ratio	R^2
1	Frequency of use	-.19	.12	1	.10	.83	.08
	Previous treatment (yes)	.39	0.48	1	.42	1.48	
	Age at first use	0.12	.11	1	.30	1.13	
	Drug of choice			2	.86		
	(marijuana)	.29	.56	1	.60	1.34	
	Drug of choice (alcohol)	-.04	.65	1	.95	.96	
	Drug of choice (other drugs)	-1.29	1.49	1	.39	.28	
	Constant						
2	Frequency of use	-.19	.11	1	.10	.83	.07
	Previous treatment (yes)	.41	0.48	1	.39	1.51	
	Age at first use	.13	.11	1	.26	1.14	
	Constant	-1.36	1.48	1	.36	.26	
3	Frequency of use	-.15	.10	1	.15	.86	.06
	Age at first use	.15	.11	1	.19	1.16	
	Constant	-1.46	1.48	1	.32	.23	
4	Frequency of use	-.16	.10	1	.11	.85	.04
	Constant	.44	.32	1	.17	1.56	
5	Constant	.07	.21	1	.75	1.07	.00

on the measure were not included in this analysis, because resulting scores on measures with this particular profile are considered to be invalid (Miller & Lazowski, 2001). The VAL scale was not included in the analysis in any other way. The other 11 scales of the SASSI-A2 were entered as individual variables into the original regression analysis. After removing the variable at each step that contributed the least to the predictive power of the model, the model converged at step eight. The final model includes the face valid alcohol (FVA), symptoms of substance misuse (SYM), SAM (supplemental addiction

measure), and Correctional Scale (COR) scales. This final regression model had a Nagelkerke R^2 of 0.243. Each step of the backward logistic-regression modeling will be depicted in Table 6.

The odds ratios presented refer to the association between each scale and graduation status and are adjusted for other terms in the model. Three scales predicted outcome of the JDC, including SYM, SAM, FVA, and COR. For every 1-point increase on the SYM scale the participant had 1.63, $\beta(1) = .49$, S.E. = .21, $p = .02$) times the likelihood of graduating from the program. The odds of graduation from JDC increased by 1.44, $\beta(1) = .36$, S.E. = .22, $p = .10$) for each 1-point increase in the SAM scale. Also, for every 1-point increase on the COR scale the participant had 1.43, $\beta(1) = .36$, S.E. = .14, $p = .01$) times the likelihood of graduating from the program. Additionally, the odds of graduating from JDC decreased by 12%, $\beta(1) = -.13$, S.E. = .07, $p = .06$) with each additional point on the FVA scale.

Research Question #4

The intent of research question #4 was to create a model that included the most robust predictors from the first three models. The researcher intended to use backward stepwise regression modeling to create an overall model of prediction, which included demographic variables, substance use history variables, and SASSI-A2 scales. However, because the first two models (based on demographic variables and substance use history variables) did not achieve significance or produce any significant predictors, it no longer seemed logical to answer the final question as planned. It seems that the SASSI-A2 final model, which answered question 3, actually best answers the question of what variables

Table 6

Logistic Regression Analysis of SASSI-A2 Scales

Step	Variable	*B*	S.E.	*df*	Sig.	Odds ratio	R^2
1	FVA	-.15	.08	1	.06	.85	.33
	FVOD	-.02	.04	1	.59	.98	
	FRISK	-.13	.20	1	.49	.88	
	ATT	.21	.17	1	.22	1.23	
	SYM	1.17	.42	1	.01	3.21	
	OAT	.10	.23	1	.65	1.11	
	SAT	.21	.26	1	.41	1.23	
	DEF	-.17	.19	1	.37	.84	
	SAM	.82	.39	1	.04	2.26	
	COR	.33	.19	1	.07	1.39	
	SCS	-.43	.24	1	.07	.65	
	Constant	-3.77	2.49	1	.13	.02	
2	FVA	-.14	.07	1	.06	.87	.33
	FVOD	-.02	.04	1	.60	.98	
	FRISK	-.15	.19	1	.43	.86	
	ATT	.22	.17	1	.20	1.24	
	SYM	1.09	.38	1	.004	2.98	
	SAT	.18	.25	1	.47	1.20	
	DEF	-.17	.19	1	.37	.84	
	SAM	.86	.38	1	.02	2.36	
	COR	.32	.18	1	.07	1.37	
	SCS	-.39	.22	1	.08	.68	
	Constant	-3.30	2.28	1	.15	.04	
3	FVA	-.14	.07	1	.06	.87	.32
	FRISK	-.14	.19	1	.45	.87	
	ATT	.22	.17	1	.20	1.24	
	SYM	1.06	.37	1	.005	2.88	
	SAT	.18	.24	1	.45	1.20	
	DEF	-.17	.19	1	.37	.84	
	SAM	.85	.38	1	.02	2.35	
	COR	.32	.18	1	.07	1.38	
	SCS	-.40	.22	1	.07	.67	
	Constant	-3.37	2.28	1	.14	.03	

(*table continues*)

Step	Variable	*B*	S.E.	*df*	Sig.	Odds ratio	R^2
4	FVA	-.14	.07	1	.06	.87	.31
	FRISK	-.15	.19	1	.44	.86	
	ATT	.20	.17	1	.23	1.22	
	SYM	1.00	.36	1	.006	2.73	
	DEF	-.15	.19	1	.42	.86	
	SAM	.89	.38	1	.02	2.44	
	COR	.31	.17	1	.08	1.36	
	SCS	-.33	.20	1	.09	.72	
	Constant	-3.45	2.26	1	.13	.03	
5	FVA	-.13	.07	1	.07	.88	.31
	ATT	.22	.17	1	.20	1.24	
	SYM	1.03	.37	1	.01	2.79	
	DEF	-.14	.19	1	.46	.87	
	SAM	.84	.37	1	.02	2.33	
	COR	.32	.17	1	.07	1.37	
	SCS	-.38	.20	1	.06	.69	
	Constant	-3.63	2.24	1	.11	.03	
6	FVA	-.14	.07	1	.05	.87	.30
	ATT	.21	.17	1	.22	1.23	
	SYM	.97	.35	1	.01	2.63	
	SAM	.82	.37	1	.03	2.27	
	COR	.27	.15	1	.09	1.30	
	SCS	-.30	.17	1	.08	.74	
	Constant	-4.49	1.94	1	.02	.01	
7	FVA	-.13	.07	1	.06	.88	.28
	SYM	.83	.33	1	.01	2.30	
	SAM	.75	.36	1	.04	2.12	
	COR	.27	.15	1	.08	1.31	
	SCS	-.23	.16	1	.15	.80	
	Constant	-4.23	1.91	1	.03	.02	
8	FVA	-.13	.07	1	.06	.88	.24
	SYM	.49	.21	1	.02	1.63	
	SAM	.36	.22	1	.10	1.44	
	COR	.36	.14	1	.01	1.43	
	Constant	-5.25	1.79	1	.003	.01	

best predict graduation from JDC. The sample size of this study is not large enough to warrant further exploration on this final question.

CHAPTER V

DISCUSSION

It was hypothesized that certain characteristics of the participants would be associated with graduation status from JDC. Graduates and nongraduates were expected to differ on two key classes of variables, demographic and substance-use history. Demographic variables in the present study included age, ethnicity, family income, and gender. Substance-use variables included stated drug of choice, frequency of use, previous substance use treatment, and age at first use. However, in addition, participants' scores on a self-report substance-use measure (SASSI-A2) were also expected to have a significant relationship with graduation status in JDCs. Finally, it was hypothesized that some combination of these particular variables would significantly predict JDC graduation and help JDC programs to differentiate at intake between the participants who will graduate and those who will terminate prematurely.

Demographic Variables

In this sample, demographic variables (age, ethnicity, family income, and gender) were not significantly associated with graduation from JDC. Several reasonable speculations about this lack of association can be offered. First, one might speculate that JDCs are not biased in terms of the quality of services, support, and so forth that they afford to diverse adolescents. That is, regardless of gender, income, or ethnicity, no particular characteristics of participants appear to bias whether one does or does not graduate from drug court.

Second, it is also possible that methodological limitations in the study could account for the lack of correlation between any of these factors and outcomes. The methodological limitations of this study that may have affected the findings will be discussed in detail later, but they primarily include the restricted range of scores or values of some variables.

Many of the expectations of this study, including the premise that demographic variables would relate to outcome, were based on findings from related bodies of literature, thought to be relevant to understanding possible outcomes in JDCs. This included the adult drug court literature, the adolescent substance use treatment literature, and the adolescent substance use disorder risk factor literature. Perhaps, generalizing findings from these bodies of literature to help form hypotheses for the present study was not warranted. In turn, it is possible that recent attempts by some writers in the field to extend the findings from these bodies of literature to JDC outcomes is likewise unwarranted.

Age

Two JDC outcome studies (Carey, 2004; Shaffer et al., 2002) and two adult drug court outcome studies (Martinez & Eisenberg, 2002; Peters et al., 1999) found a significant relationship between age and graduation status in JDCs. However, there is inconsistency in the literature concerning the direction of this relationship. A finding, which further documented such a relationship between age and graduation and added support for the direction of the relationship, would be important for the JDC field. That is, identifying the age(s) at which a JDC is most effective might guide the development

of age-relevant interventions in drug courts in the future, which could help to increase graduation rates overall.

However, in the present study, no relationship between age and JDC outcome was found. There are several possible explanations for this result. Explanations include the possible limitations of generalizing adult drug court findings to adolescent drug courts, problems with the restricted age range of this sample, and the possibility that JDCs are simply not biased in terms of the quality of services they provide to juveniles of different age groups.

The lack of significant relationship between these two variables was somewhat surprising, because the adult drug court literature suggests that increasing age of admission negatively effects outcome. However, it may be that variables such as the association between the chronicity of the substance use disorder and age, or age-related issues concomitant with substance use (legal problems, parenthood, health problems, etc.) are actually mediating factors in this relationship in adult addicts. It is possible that none of these aforementioned possible confounding variables have yet reached a necessary threshold to affect outcome in participants who are under 18. For example, an 18-year-old substance abuser (the oldest possible age for participation in JDC) will not have faced nearly as many of the negative consequences of substance abuse as the oldest addicts in an adult drug court program. It may be that it is the cumulative effect of these negative consequences that prompts many adults to re-enter treatment with greater motivation. This explanation may account for the association between age and outcome in the adult drug courts and the lack of association between these variables in JDC

programs. If this explanation is valid, the tendency in the broader literature to generalize the adult drug court model to adolescents may be unwarranted.

Some of the JDC literature suggested that the relationship between age and outcome would not be linear. For example one study showed that both the youngest and the oldest participants were most likely to graduate (Shaffer et al., 2002). However, the age range of participants in the present study was restricted in comparison to the studies that supported this bimodal relationship. Thus, because the JDC included in the present investigation involved very few participants under 14 and no participants over 18, it may be that the restricted range of this variable reduced the likelihood that a significant correlation between age and outcome would be found.

It is equally possible, however, that the drug court examined in the present study in particular, and, many JDCs in general, are equally effective for adolescents of all ages. If this is true, then JDCs are not differentially helpful as a function of age. Therefore, admissions decisions do not have to take age of participants into account in assignment of youth to drug court versus alternative interventions, because a 13-year-old would be as likely to benefit from the program as a 15- or 17-year-old.

Family Income

Although, low SES is considered by some researchers to be a risk factor for adolescent substance use disorders (Hawkins et al., 1992; Smart et al., 1994; Williams et al., 1999) and for increased delinquency during adolescence (Beyers et al., 2001; Cottle et al., 2001) and, therefore, would be expected to relate to drug court outcomes, no juvenile or adult drug court evaluation has examined the effect of SES on drug court

outcomes. A finding of a significant relationship between SES and JDC would certainly have implications for the design of future JDC programs. An understanding of this relationship could lead to a better understanding of the populations who are best served by this model of intervention and eventually the development of more effective cohort-specific interventions. For example, if existing JDCs are optimally effective with high SES teens, a clear challenge exists for researchers and clinicians to develop JDCs that are useful for low-SES groups.

However, in the present study, no significant relationship was found between SES and graduation status, in spite of sufficient variability in the SES of the study participants. It could be concluded then that SES status has no association with effect on adolescents' ability to benefit from JDC. This would indicate that JDC treatment resources should be allocated regardless of SES, and that individuals from all SES groups can benefit from this treatment equally.

Certainly, the present study found no association between monthly family income and graduation. In turn, this variable may have proved to be an inadequate operational definition of SES in the present study. For instance, considering that the family income was not adjusted for the number of family members and was based solely on self-report of the primary caregiver, there may be a more powerful indicator of SES that would have significantly predicted outcome. Future studies should take this limitation into account and provide a more valid and inclusive measure of SES in the analysis.

Ethnicity

Although being Caucasian is considered a risk factor for developing substance

use disorders in adolescence (Farrabee et al., 2001; Kilpatrick et al., 2000; Maddahian et al., 1988), Caucasian participants have been found to be more likely to graduate from both adult and JDCs when compared to minority participants (Butzin et al., 2002; Hartley & Phillips, 2001; LeCroy & Milligan Assoc., 2003; Martinez & Eisenberg, 2002; Shaffer et al., 2002). If drug courts in general and JDCs in specific are biased towards Caucasian participants, then this discrepancy must be addressed by the field. Further support for this discrepancy would suggest that the drug court model should be changed in order to be optimally effective for all ethnic groups. For example, further training in cultural sensitivity for judges, parole officers, therapists, and other drug court staff may be warranted.

This current study, however, found no statistically significant relationship between ethnicity and graduation status. It is possible that this particular JDC was equally effective for both majority and minority populations and, therefore, was not biased towards Caucasian participants. If supported by other outcome studies, this could be a very important finding for JDCs, because it suggests that a minority participant is as likely to benefit from the experience of drug court as a majority participant and that further training of JDC staff in multicultural sensitivity is not warranted.

However, the present study did not include sufficient number of ethnic minority participants to conclusively determine whether a relationship exists between ethnicity and outcome. Few ethnic minority youth populated the JDC that was the focus of this study. For example, Hispanic adolescents have been found by other drug courts to be the most likely population to terminate early from drug court (LeCroy & Milligan, 2003; Rodriguez & Webb, 2004). The participants in the present study were fairly

homogeneous with regard to ethnicity. Any relationship between Hispanic ethnicity and graduation status would have been masked in this study by the fact that minority participants were aggregated due to very small sample sizes. Although the rates of ethnic minorities in this study were low compared to a national sample of JDC participants (OJP Drug Court Clearinghouse and Technical Assistance, 2001) they are consistent with the ethnic makeup of the Davis County, Utah (U.S. Census, 2004) community. Therefore, the findings of this study may not adequately generalize beyond Davis County, Utah. Future studies that are conducted in areas with more ethnic diversity may find a significant relationship between ethnicity and graduation status, as such relationships have been found in the adult drug treatment and drug court literature.

Gender

As a result of the above review of the literature, it was expected that males would terminate prematurely from JDC at higher rates than females. This expectation was supported by evidence that males are at higher risk for developing substance use disorders and delinquency problems in the first place (Hawkins et al., 1986, 1992) and have been found to have a poorer prognosis following juvenile substance use treatment in general (Latimer et al., 2000b). Further support for this trend would suggest that it is important for the JDC field to develop a model of drug court that would benefit both male and female participants or that individual programs should be developed for each gender.

However, the hypothesis that gender would have a significant effect on outcome was not supported. With almost a third of the participants being female, low numbers or

lack of variability cannot be blamed for the nonsignificance of this finding. Interestingly, JDCs nationwide have only 18% female participation participants (OJP Drug Court Clearinghouse and Technical Assistance, 2001). Perhaps the higher rate of females in this particular JDC program had some effect on the relationship between gender and outcome.

Certainly, although males in general are at higher risk for both developing substance use disorders (Hawkins et al., 1986, 1992) and for recidivating once in the juvenile justice system when compared to females in general (Kier, 2002), the females who are referred to drug court may be qualitatively different in important ways from the average female population (Cooper, 2003). For example, by the time a female is referred to a JDC she may be more entrenched in both her addiction and criminal activity than other females her age. Also, because males are considered to be more at risk for substance abuse and other delinquency problems than females, they may be noted and referred into the system earlier in their addiction/criminal career and, therefore, would be just as likely to graduate as a female who is referred later. This finding suggests that continuing with co-ed JDC programs, with no adjustments or alterations in programming for each gender, continues to be warranted.

Substance Use History Variables

As was the case with demographic variables, graduation status was not significantly associated with substance use history variables (stated drug of choice, frequency of use, previous substance use treatment, and age at first use). The present author had speculated that adolescent participants with different histories of substance

use/abuse would have different rates of graduation. However, it appears as though this particular JDC is equally effective with teens possessing diverse substance use histories.

Drug of Choice

Although some studies have found that participants who choose alcohol as their drug of choice graduate at higher rates than other participants do (Thompson, 2001) and other studies find the same for participants who choose either marijuana or alcohol (Peters et al., 1999), this study found no such relationship. It was expected that either participants who chose alcohol, marijuana, or both would graduate at higher rates than participants choosing other drugs (cocaine, heroin, etc.). However, this was not the case for this sample. This suggests that, for at least this one JDC, participants with addictions to "harder drugs" can be just as successful in drug court as their alcohol and/or marijuana abusing counterparts. This is an interesting finding, because it was assumed that adolescents who were already abusing "harder" drugs would have a very poor prognosis and would not benefit from treatment. The possibility that these adolescents are just as likely to benefit from the treatment as anyone else provides a sense of hope, that with enough support anyone can recover from substance abuse disorders.

One limitation to this particular variable is the fact that study participants were asked only to identify one drug that they would choose above all others and not to identify all of the drugs that they use or are addicted to. The way that this question was worded ignored the possibility that some of the participants are likely poly-substance abusers and other are not. Because the literature suggests that it is poly-substance users who are least likely to complete drug court (Carey, 2004), future studies may wish to

group poly-substance abusers together and single substance abusers together to see if that distinction would help in the prediction of outcome.

Frequency of Use

It was expected that frequency of use would relate to outcome in juvenile courts, because a lower frequency of use has been found to predict graduation, rather than termination, from one adult drug court (Butzin et al., 2002). Further support for this relationship would suggest that participants with relatively high (i.e., daily use) stated use frequencies would not benefit optimally from the drug court program and, therefore, should not be admitted. By restricting admission to drug court and only admitting participants with relatively low frequencies of use drug courts might be able to lower attrition rates and increase successful graduation rates.

However, a significant relationship between frequency of use and graduation status was not found. It seems, then, that drug courts can confidently enroll adolescents who are using at varying frequencies with similar hopes for their success. One limitation to this finding, of course, is that the frequency variable was based solely on participant self-report. A more accurate representation of the frequency of an adolescent's use might be a more powerful predictor of JDC outcome.

Previous Substance Use Treatment

It was hypothesized that participants' prior substance use treatment experience would have been correlated with outcomes in JDCs, although only one previous study has addressed this question. Festinger et al. (2002) found that adult drug court participants who had previously attended treatment needed more supervision and

attention than participants who had not. If this finding were to generalize to the JDC population, it would suggest that participants with a history of substance use treatment would require additional support in order to benefit from the drug court program.

Presently, it is still unclear whether previous treatment attempts have a positive or negative effect on one's most current treatment outcome. It is possible that treatment trials have a cumulative impact, for example, previous treatment would actually prime a participant for success rather than for failure in subsequent treatment. The fact that in the present study the existence of previous treatment attempts was not associated with graduation rates suggest that providing additional support for adolescents who have previously attended substance use treatment cannot be justified.

Age at First Use

A number of studies examining risk factors for substance use in teens suggest that an earlier onset of substance use is indeed predictive of the development of substance use disorders (Gonzalez, 1989; Hawkins et al., 1986; Sung et al., 2004; Warner & White, 2003). Also, adolescents who begin using alcohol and drugs earlier are believed to have a worse prognosis than those who begin using later (DASIS Report, 2005). Therefore, in the present study, it was hypothesized that participants who reported an earlier onset of use would graduate from JDC at lower rates than participants who reported a later onset of use would. A finding to further support this hypothesis would have lead this researcher to suggest that participants with longer use histories should not be accepted into JDC programs, because they would not likely benefit from the treatment. Therefore, by

accepting only adolescents with shorter substance use histories JDCs could increase the rates of graduation nationwide.

However, earlier onset of use was not significantly predictive of termination from the JDC examined in the present study. Because no other JDC study/evaluation has yet assessed this variable as a possible predictor of outcome, the present finding requires replication. However, this finding suggests that participants with longer histories of use are just as likely to graduate from JDC as those participants who are in the earlier stages of the addiction process are. Therefore, at this time, JDCs have no empirical basis for differentially accepting participants based on the length of their history of use, because an adolescent who has been using for a relatively long time (i.e., several years) will be just as likely to graduate as an adolescent who has been using for a relatively short time (i.e., 6 months).

Substance Abuse Subtle Screening Inventory--Adolescent Version Revised

Although the substance use history variables above were not significantly associated with graduation status in JDCs, the SASSI-A2 (a measure of adolescent substance abuse symptoms) did provide some insight into who graduates from JDCs versus who does not. A significant model of prediction of JDC success included several scales of the SASSI-A2 measure. Although there are 12 scales on the SASSI-A2, only four of the scales were included in the final SASSI prediction model. The combination of scores from the Face Valid Alcohol (FVA) scale, the Symptoms of Substance Misuse (SYM) scale, The Supplemental Addiction Measure (SAM) scale, and the Correctional

(COR) scale together provide a moderate predictor of JDC graduation status (Nagelkerke $R^2 = 0.243$).

The SYM scale on the SASSI-A2 is a measure of consequences of substance abuse and of the amount of loss of control that occurs when an adolescent uses (Miller & Lazowski, 2001). The SYM scale is made up of only true/false questions and the score on the SYM scale can range from 0 - 9. Each point increase on this measure was found to almost double the likelihood of graduating from the drug court, when the other three scale scores were accounted for. Interestingly, this seems to suggest that adolescents who have suffered more substance use consequences and loss of control are actually more likely to graduate from JDC than those adolescents who have suffered less as a result of their substance use. This may also suggest that adolescents who are more able to appreciate the reality of substance abuse consequences are more likely to benefit from this treatment program, because the SASSI-A2 is a self-report measure.

The SAM scale on the SASSI-A2 is designed to distinguish highly defensive adolescents with substance use dependence from highly defensive adolescents who are not having substance abuse problems (Miller & Lazowski, 2001). The scale includes items that were found to differentiate between known addicts and controls, both of which were given instructions to answer the questions defensively. The SAM scale is made up of true/false questions and total scores on this scale range from 0 - 7. In the present study, each additional point on this scale increases likelihood of graduation by 144%. However, the predictive power of this scale was not significant at the .05 level. This finding suggests that defensive adolescents with profiles similar to known addicts are more likely

to graduate than defensive adolescents with profiles similar to adolescents who have not been diagnosed with SUDs.

The Correctional (COR) scale is designed to distinguish between adolescents who have been involved in the juvenile justice system and those who have not. It was not designed to serve as a measure of future criminality. Scores on this scale range from 0 to 16. Each one point increase in scores on the COR scale increases the chances of graduating by 143%. This finding suggests that drug court participants who fit the profile of adolescents with criminal histories are better served by drug courts than those adolescents who do not. The SASSI manual (Miller & Lazowski, 2001) suggests that adolescents with high COR scores may need more intensive structure and supervision. Because juvenile drug court programs certainly provide both, perhaps these adolescents are particularly suited for this type of program.

The FVA scale includes only obvious/face valid items regarding substance use and is designed to measure the extent of usage that an adolescent is willing to acknowledge (Miller & Lazowski, 2001). The scores in this scale range from 0 - 36. All questions included in this scale are answered in terms of frequency (i.e., never, once/twice, several times, or repeatedly). Although the predictive power of this scale was not significant at the .05 level, it was included in the final predictive model, because increasing scores on this scale decreased chances of graduation by 12%. This may suggest that adolescents who are willing to endorse more substance using behaviors with greater frequency are less likely to graduate. This may also suggest that adolescents who are more entrenched (i.e., using more frequently, experiencing greater consequences, or

experiencing more loss of control) in their addictive behaviors are less likely to benefit from drug court.

Although the positive direction of the SYM scale and the negative direction of the FVA scale may seem to contradict each other, there are some differences between the two scales that may explain the contrast. For example, the SYM scale includes only true false questions that tap whether or not an adolescent has ever experienced the consequences of their use, while the FVA utilizes frequency questions that tap how often an adolescent is engaging in substance abuse and how often they experience consequences (Miller & Lazowski, 2001). Honest admission of the extent of one's problem may be a predictor of success, whereas the existence of multiple symptoms and a high frequency of symptoms/behaviors may be a predictor of failure. It is also important to note that although both the SYM and FVA scales are designed to be face valid measures of abuse and symptoms, they actually do not include the same questions. It is possible that with a JDC population (on which this measure was not normed) the difference between the questions of these two scales differentially predict failure or success.

The positive direction of the COR scale suggests that adolescents with more similarities to those with experience in the justice system are more likely to graduate. It seems possible that there may be an additive effect of justice system experience that may prime an adolescent for change. For example, an adolescent who has experienced more legal consequences of use may be more ready to engage in this type of treatment. They may also have a better understanding of the alternative, adjudication.

The positive direction of the SAM scale suggests that adolescents who share profiles with normal adolescents who were encouraged to answer defensively did not graduate as often as adolescents who had similar profiles as known substance abusers who were encouraged to answer defensively. This finding suggests that adolescents who enter drug court without meeting the criteria for a SUD may not have a good chance of completing the program. This finding has important implications for JDCs. Most importantly it underscores the importance of correctly diagnosing participants at intake. This suggests that only qualified clinicians who can make the differential diagnosis between abuse and dependence should be utilized for intake assessments.

It is also interesting to note the scales that did not significantly improve this model and their design. For example, although higher scores on the Face Valid Alcohol scale predicted lower graduation rates, the Face Valid Other Drug scale did not warrant inclusion in the prediction model. Perhaps willingness to admit drinking behavior is more predictive of outcome than willingness to admit drug use behavior.

The Secondary Classification (SCS) scale, which distinguishes adolescents with abuse issues from adolescents who have crossed the line into abuse was not included in the final model. This finding suggests that adolescents that have already crossed the line into dependence may be able to benefit and graduate from JDCs alongside adolescents who have not yet done so. However, this was the last scale to be thrown out by the backward stepwise logistic regression analysis. This may suggest that adolescents with dependence may have more struggles in drug court than their abusing counterparts.

Scores on the FRISK (Family-Friends Risk Scale) also were not included in the final model. This scale is reportedly a face valid measure of the likelihood that an

adolescent is living in a social environment with fosters substance abuse (Miller & Lazowski, 2001). This suggests that the scale either does not measure what it is designed to measure or that social environment is not an important factor in determining who will graduate from JDC.

Adolescents who score high on the ATT (Attitudes Scale) reportedly endorse a belief system that promotes substance misuse (Miller & Lazowski, 2001). However, this scale did not predict outcome of JDCs significantly. It is possible that the drug court itself treats these dangerous beliefs and therefore nullifies their effect on outcome. It is also possible that this scale does not adequately measure the types of beliefs about substance use that would predict failure from drug court.

The OAT (Obvious Attributes Scale) is designed to measure an adolescents ability to recognize the problems that they are having in their lives, but does not claim to measure their insight into the causes of these behaviors (Miller & Lazowski, 2001). Therefore, the inability to predict JDC outcome using this scale may be due to the possibility that the ability to see problems is not helpful for an adolescent if they are not able to cognitively link those problems with their substance use. However, the SAT (Subtle Attributes Scale) reportedly measures an adolescent's insight into their substance-use related problems (Miller & Lazowski) and also did not significantly contribute to the prediction model. There are several plausible explanations for this finding. It is possible that insight is not an important factor in drug court success, or that insight can come later in the process and is not necessary at intake, or that this scale is not a valid measure of the insight necessary for drug court success.

Although the SAM scale, which is a measure of defensiveness, did help to predict outcome, the DEF (Defensiveness Scale) was not included in the final prediction model. The DEF scale was created by the inclusion of questions that were proven to distinguish between adolescents who were instructed to answer honestly versus adolescents who were instructed to hide substance use problems. The SAM scale is different from the DEF scale in that it was designed to distinguish between two types of defensive adolescents; those with substance use problems and those without substance use problems. Therefore, the SAM scale assumes defensiveness, whereas the DEF does not. This may explain why the scores on the SAM scale contributed significantly to the prediction model, while scores in the DEF scale did not. Also, while high scores on the DEF scale correspond with high defensiveness, very low scores in the DEF scale have been found to correspond with low self-esteem (Miller & Lazowski, 2001). Such a curvilinear relationship between the DEF scale and outcome might have masked a significant association in the current analysis. This would happen if highly defensive and low self-esteem individuals were less likely to graduate, with those scoring in the middle range of the DEF scale actually most likely to benefit from the JDC program.

Together these SASSI-A2 findings suggest that an adolescent with a diagnosable substance use disorder, who fits the profile of an adolescent criminal and who is cognizant of the symptoms and adverse consequences of their disorder is the most likely to graduate from JDC.

Study Limitations

Some limitations of the present study include a lack of variability in some of the

variables, primarily self-report data, and possibly questionable operational definitions one or more variables. Lack of sufficient sample size at subgroup level, particularly ethnicity and drug of choice, may have significantly affected the findings of this study. For example, this sample had very few minority participants, a fact which made it difficult to conclusively say that ethnicity did or did not relate graduation rates. There were, likewise, very few participants who endorsed drugs of choice other than marijuana or alcohol. Because, it was originally hypothesized that individuals who preferred "harder" drugs such as heroine or cocaine would graduate at lower rates than those who chose marijuana or alcohol, it becomes difficult to interpret the findings of no significance. Future studies with sufficient sample size and/or power in these two variables may, in fact, find that there is a significant association between them and JDC outcome.

The fact that all of the data included in this study (except for graduation status itself) was based on the self-report of participants and their primary caregivers is another possible limitation of the present study. Because both participants and their caregivers seem to have ample reason to provide incorrect information, particularly regarding substance use history variables, there is some reason to doubt the accuracy of the findings of this study. However, it would be expected that drug courts nationwide receive intake data in a similar self-report format. There does not seem to be a more cost-effective way of assessing participant characteristics and history; self-report continues to dominate the field of substance use treatment.

One major limitation of the present study was the way SES was measured. By including a family's monthly income without adjusting for the number of people

supported by that income, the present researcher did not include a robust or meaningful operational definition of SES. Future studies should attempt to provide a less simplistic representation of SES in order to better answer the question of whether SES is associated with JDC outcome.

Future studies should also consider assessing poly-substance use. Although, participants in the present study were asked to identify their drug of choice, they were not asked to identify all of the substances that they had been using regularly or whether they were engaged in either single or poly-substance use. Because poly-substance users are believed to have poorer outcomes in general, this would be an important variable to include in future studies concerned with JDC outcomes.

Future research should also seek to investigate other possible predictors of outcome such as religiosity, social support and school involvement. Once an adequate profile for JDC noncompleters emerges, researchers should seek to explore treatment modalities or changes in the current JDC model that will benefit these adolescents.

Summary

Neither single demographic variables (age, ethnicity, family income, and gender) nor substance use history variables (stated drug of choice, frequency of use, previous substance use treatment, and age at first use) were significantly associated with graduation status or combined to create significant prediction models of JDC outcome. A critical unanswered question asks whether drug courts are a truly effective treatment modality or simply a sorting mechanism for who will have positive or negative outcomes. For example, JDC graduates may be those who have the characteristics

needed to succeed post-adjudication anyway, while nongraduates may be those who will self-select for poor outcome regardless of the treatment modality.

The nonsignificance of findings related to demographic variables may support the idea that JDCs are not biased based on gender, ethnicity, age, or SES. This is a positive finding for the JDC field, considering that participants in drug courts nationwide are increasingly diverse with regards to these demographic variables.

The nonsignificance of findings related to substance use history variables can also be considered encouraging. These findings suggest that adolescents with diverse substance use histories can mutually and equally benefit from drug court programs. Therefore, the hypothesis that adolescents with specific substance use histories should not be accepted to JDCs was not supported.

However, four SASSI-A2 scales did combine to moderately predict graduation status in JDCs. Therefore, the SASSI-A2 measure may now be utilized by JDCs to help to predict who will graduate from drug court. This already widely used measure may prove useful in making admission decisions in JDCs and, in turn, increasing overall effectiveness. The SASSI can provide a more standardized way to objectively evaluate this population and to effectively predict who will struggle.

Specifically, it appears that adolescents who meet diagnostic criteria for substance use disorders and who are consciously aware of both the symptoms and negative consequences of their substance use behavior, are perhaps more motivated to engage in treatment. Also adolescents who have a similar mindset to other adjudicated youth are more likely to benefit from drug court than those who do not fit the profile of known offenders.

A prime benefit of JDCs is that willing participants, who would otherwise be adjudicated, are allowed to live a more normal adolescence (i.e., living at home, attending school, dating, etc). However, 50% of this population finds themselves serving their specified sentences in spite of attempts in drug court; thereby prolonging their involvement in the juvenile justice system. By admitting participants who are more likely to graduate and/or by providing differential treatment to those who will likely struggle, JDCs nationally may be able to decrease attrition rates. Because nongraduates of JDCs are believed to have a poor prognosis following treatment (Tranchita, 2003), prospective participants who are deemed unlikely to graduate may be better served by standard adjudication procedures or by another form of treatment entirely and perhaps should not be admitted into JDCs.

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